Understanding Factors Influencing Users' Retweeting Behavior---A Theoretical Perspective

Completed Research Paper

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ABSTRACT (REQUIRED)

Currently, a large percentage of tweets in micro-blogging platform are retweets. In this study, we propose to examine the factors that motivate users' retweeting behavior, leading users to prefer to transform others' tweets than posting their own. We suggest that Information Sharing Self-Efficacy, Attachment Motivation and Critical Mass are the three antecedents contributing to the users' retweeting behavior. Both theoretical and practical implications of this study are also discussed.

Keywords (Required)

Micro-Blogging, Retweet Behavior, Self-Efficacy.

INTRODUCTION

Micro-blogging is a relatively new type of online social networking application, through which users can broadcast any information that they would like to share in short texts (Jansen et al. 2009). Micro-blogging has already become one major source of media. The largest micro-blogging platform in China---Sina Weibo, has more than 500 million registered users as of December 2012. Twitter, another large and the very first micro-blogging platform, also has over 200 million active users as of 2012. Micro-blogging is different from other social network applications in two aspects: 1) it limits the size of each tweet (i.e. up to 140 characters); 2) While users in other social network application build friendships undirected, the connections in micro-blogging platforms are directed. If a user is interested in other users' tweets, he will follow them and become one of their followers. However, a user's followee (i.e. the person who he follows) is not necessarily his follower.

There are two types of posts in the micro-blogging platform: tweet and retweet. Tweeting is when the information is directly updated from a user. All the followers of this user will get notified once a new tweet is posted. Re-tweeting is an indirect update from the user. Users can repost the tweet written by other users. Reposting is convenient in micro-blogging platform by just clicking the "retweet" button. Some platforms encourage users to provide their reposting reason in front of their retweet. Most retweets are from their followees but not necessarily all. A user could repost any tweets he/she would like to.

Retweets are less common in other types of social network applications (i.e. Facebook). Users in other social network applications mostly update their own messages. However, retweeting is really prevalent in the micro-blogging platform. Previous studies have found that almost 35% of tweets in Twitter are retweets, and this percentage in Sina Weibo is much higher and up to 65% (Yu et al. 2012). While this phenomenon has energized considerable research (Boyd et al. 2010, Macskassy and Michelson 2011, Suh et al. 2010, Yang et al. 2010), most research to date has focused on identifying the external features of retweets. Few of them have considered the users' motivations behind retweeting behavior. Thus, in this study, we intend to identify the factors that are the antecedents for the retweeting behavior intention in micro-blogging platforms.

We first review the prior literature related to micro-blogging, paying particular attention to the circumstance in which a user reposts a tweet. Then, the theory of the triadic reciprocal causation model (Bandura 1986, 1997) is introduced to provide a theoretical framework. Three factors from personal and environmental aspects are identified as potential determinants in section 3. Finally, we discuss how the potential results extend our theoretical understanding of the nature of retweeting behavior in micro-blogging platform and its practical implications as well.

LITERATURE REVIEW

Though it is still a relatively new phenomenon in online social networking, the unprecedented popularity of micro-blogging platforms has attracted much attention. Early researchers have explored the reasons behind the pervasive usage of this technology. Zhao and Rosson (2009) have found that compared to other social network applications, micro-blogging is unique in both its technological features (i.e. brevity, mobility access, and broadcast nature) and its content features (i.e. updates about personal life activities, real-time information and people-based RSS feed). In addition, the users mostly view micro-blogging as a channel to acquire valuable information and report news (Java et al. 2007, Zhao and Rosson 2009). Accordingly, Krishnamurthy et al. (2008) have categorized three types of micro-blogging users based on their intention, i.e. broadcasters, acquaintances and miscreants. Also, perceived usefulness, satisfaction and habit are shown to positively affect the users' continued usage of micro-blogging (Barnes and Böhringer 2009).

One of the most important micro-blogging behaviors that is of our interest is retweeting. Compared to other social network applications, one characteristic of micro-blogging platform is that a notable percentage of posts are retweets. Retweeting behavior usually has two purposes. The first one is information sharing to the audiences, and the information content could be in any formats, i.e. news, useful tips, article link or pictures. The second one is communicating with a particular followee, and the content could be a comment or a response (Boyd et al. 2010). Previous scholars have found that almost 35% tweets in Twitter are retweets (Yu et al. 2012). And statistics have shown that the percentage of retweets increases exponentially during mass crises and emergency events, such as fires, flooding, elections and so on (Hughes and Palen 2009, Nagarajan et al. 2010, Starbird and Palen 2010). During these mass events, retweets are more likely than non-retweets to contain information about the event and micro-blogging has become a prominent information sharing platform (Starbird and Palen 2010).

Previous literature indicates the important role that retweeting behavior has played in the micro-blogging platform. Thus, the users' general retweeting behavior has been studied by some scholars. Kupavskii et al. (2012) have developed the model which could predict the size of retweet cascade. Yang et al. (2010) have developed both the SVM classifier and the LogReg classifier to predict whether a tweet will be retweeted. Wang et al. (2012) has proposed a recommendation framework for users to find their potential interesting tweets to retweet. Scholars have also studied factors correlated with the retweeting possibility. Hong et al. (2011) have found that the tweets from a user with a larger number of followers will have a higher possibility to be retweeted. Suh et al. (2010) have identified that if tweets containing URLs and hashtags will increase their retweetability, while Macskassy and Michelson (2011) have suggested content similarity between users should be considered when predicting the tweet's retweetability. Based on all possible features of users, writers and tweets, Feng and Wang (2013) have developed the feature-aware factorization model to predict whether retweets a message or not. Hereby, while the importance is not consistent across the studies, features such as the content, the author, and the time of the tweets have been observed to be correlated with the retweets.

Despite the extensiveness of previous studies, researchers have primarily concentrated on discovering the external features of retweets. In contrast, very little research has focused on theoretically explaining the antecedents to retweeting behavior. The external features, while correlated with the retweets, may not be the causations. Hereby, finding the antecedents to the retweeting from a theoretical perspective will help us understand the retweeting behavior. Hence, we propose a theoretical framework to explore the antecedents to the retweeting behavior. In the next section, we will discuss the framework---the triadic reciprocal causation model.

THEORETICAL FRAMEWORK AND RELATED HYPOTHESIS

The term of triadic reciprocal causation model comes from Bandura's social cognitive theory, which is a widely accepted model for validating individual behavior (Bandura 1982, 1986, 1997). One basic statement of this model is that the internal personal factors, the environmental factors, and the behavior act as interacting elements that will influence each other bidirectionally (Wood and Bandura, 1989). For internal personal factors, they can be further categorized into three types: cognition, affect, and biology as shown in Figure 1. The reciprocal nature of the three elements—personal factors, environmental factors and behavior--- makes it possible for therapeutic and counseling efforts to be directed at each one of them. Strategically leverage any two elements facilitates improving the third one.

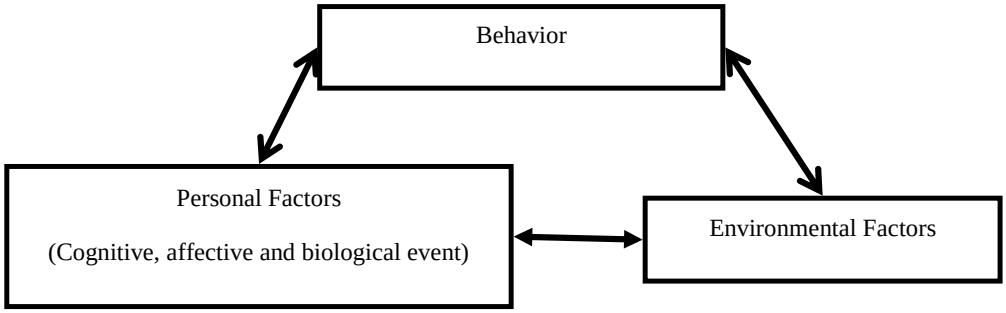

Figure 1. Triadic reciprocal causation model of social cognitive theory (Scoured and Adapted from Bandura 1986)

While the triadic reciprocal causation model advocates the interplay relationship among the three determinants (Bandura, 1986; Wood and Bandura, 1989), the present study concerns the role of personal and environmental factors on individual behavior. The focus is the individual behavior intention to retweet. Based on the triadic reciprocal causation model, we may reasonably assume that the user's personal factors and the micro-blogging platform environment should have influence on the individual retweeting behavioral intention.

For personal factors, we will examine them from the first two types: cognition and affect. Biological factors (i.e. genetics) are not considered here due to two reasons: 1) retweeting is more a collective behavior rather than existing in a specific genetic group, so that the effect of biological factors is small; 2) the previous studies examining retweeting behavior do not find the difference in gender, age, blood type or any other biological issues. Both the personal cognitive and affective factors are suggested as determinants. As discussed above, a tweet is reposted in two circumstances: information sharing and personal communication. On one hand, information sharing occurs when the user has acknowledged the tweet's content so that he/she intends to share it with other audiences. Hereby, in this case, retweeting behavior intention is related to the cognitive factor, since it requires the cognition for the tweet value. The affective factor, though seems to correlate, does not play a role here. For instance, a user who is interested in investment may follow a favorite market analyst's micro-blog. He/she may not repost the analyst's tweet until he/she finds something interesting. But if this analyst is indeed an expert and this feature is reflected in the tweets, the user could have a large number of retweets from this followee. Hence, despite that previous studies show that the author of the tweet may correlate with its number of retweets (Zhao and Rosson 2009), it is the value that the analyst added into the tweet rather than a personal liking of the analyst decides the retweeting behavior intention. On the other hand, retweeting for personal conversation is determined by affective factors. The occurrence of a conversational retweeting largely depends on whether the user would like to communicate with another user, which is determined by their interpersonal relationship. A user may repost his or her friend's tweet to respond to a dinner invitation or wish for an interview success. The affective factors, regardless of positive or negative, may lead a conversational rewetting among micro-bloggers.

Among all individual cognitive factors, information sharing self-efficacy is brought up as a potential determinant while attainment motivation is suggested from affective aspect. Another factor emerges in the environmental side is perceived critical mass. We will discuss each of factors and their influence in following sub sections.

Information Sharing Self-Efficacy

Self-efficacy is one important concept in Bandura's theory, which is defined as a person's belief about his or her ability, capacity and persistence to accomplish a task when faced with the challenges of life (Bandura 1986, 1997). The perceived self-efficacy plays an important role in influencing individuals' motivation and behavior (Bandura, 1982, 1986, Igbaria and Iivari, 1995). It is suggested to be a predictor of individual's behavioral intentions (Ajzen 2002, Bandura 1997, Compeau and Higgins 1995). Individual with high self-efficacy is more likely to perform the intended behavior than that with low self-efficacy.

The concept of self-efficacy has been employed by many IS researchers and a variety of concepts have been introduced. Some researchers have adapted this concept of self-efficacy into computer usage and defined computer self-efficacy as individuals' judgment of their capabilities to use computers in diverse situations (Compeau and Higgins 1995, Johnson and Marakas 2000). It could facilitate overcome the barriers faced in using the computers (e.g. anxiety) and increase the usage

(Compeau and Higgins, 1999). Similarly, Hsu and Chiu (2004) have introduced the construct of Internet self-efficacy, which could help improve the performance when using Internet.

In the present study, we suggest that the concept of self-efficacy could be applied to information sharing to validate the effect of personal efficacy belief in retweeting behavior intention, which is information sharing self-efficacy. Clearly, reposting others' tweet is an easily conducted activity with no technology challenges. Nevertheless, users may not repost an interesting tweet but just read it by themselves. There are many other barriers except the technological aspects. The judgment for the credibility is a critical one. The breviary feature of tweet brings convenience to the followers, but it increases risks for credibility due to providing less cues. Researchers have found that users are relatively poor in judging the credibility of the tweets judges, while they indeed concern about the credibility issue, especially for the political, emergency, and consumer oriented tweets (Morris et al. 2012). Accordingly, a user with high self-efficacy may have a high intention to share a tweet, since he/she is more confident about his or her judgment as well as his ability to take risks. Another obstacle existed in retweeting is adding explanation. Some micro-blogging platform will remind users to write their retweeting reasons. The reason could be any words that the user wants to add. The user with a high self-efficacy will add their retweeting reason as an opportunity to contribute their own knowledge, which is less likely to be conducted by the user with low self-efficacy. Though adding explanation for retweeting is not required, it may discourage the retweeting intention of the user with low self-efficacy. Consequently, as suggested by former studies, the perceived information sharing self-efficacy influences people's information sharing behavior (Kankanhalli et al. 2005; Chiu et al. 2006; Hsu et al. 2007). Therefore, this study views the construct of information sharing self-efficacy as a behavioral control variable to deal with the situations in which people face the challenge of judging the credibility and adding explanation in the micro-blogging retweeting behavior intention. Hereby, we propose the following hypothesis:

H1. Users' information sharing self-efficacy has a positive effect on their retweeting behavior intention.

Attachment Motivation

Attachment motivation is a personality attribute that indicates an individual's desire for social interaction and social communication (Bowlby 1969). Human beings are inherently motivated to hold and keep at least a minimum amount of lasting, positive and significant interpersonal relationships (Baumeister and Leary 1995). People have a pervasive drive to attach with others, since they could seek support from other affiliation and feel safe under social connections (Reis and Patrick 1996). While there are various types of social interaction, previous studies have shown that attachment motivation is the foundation for building and maintaining various types of social interaction and interpersonal relationships, such as friendships, community relationships and marketing relationships. (Becker 1992, Kanter 1972, Morgan and Hunt 1994, Mowday et al. 1982, Rusbult 1980,1983).

Attachment motivation is suggested to contribute to retweeting behavior from the affective perspective, since it is the antecedent to the conversational retweets. In the conversational retweets, a reposting indicates a kind of communication and interaction. For example, a user's followee may write a tweet about a lunch invitation. This user may retweet it and add the suggested time and location. By reposting the tweet, the user interacts with his followee and sends his comment as well. While his followers could see this retweet, it is not the user's major concern. The motivation for connecting with this followee is the primary reason behind the retweeting behavior. People with higher attachment motivation are more inclined to seek social support from others as a source of information and help (Mikulincer 1995). They usually have a positive view on the affiliation with others and they are more likely to be contacted by others as well. Thus, they are more likely to utilize micro-blogging to keep in constant contact with others and their retweeting behavior intention may be higher. But for the people with a low attachment motivation, they are more reluctant to connect and be connected with others. Such type of people may feel less comfortable during the social interaction with others (Collins and Read 1990). Due to the lack of active interaction, they are easily isolated from others so that they feel more anxious about interaction (Mikulincer 1995). In such a vicious cycle, their retweeting behavior intention for communication with others will decrease relatively. But it may not affect their retweeting behavior intention for information sharing, since sharing could be a unidirectional behavior without any interaction. It is possible that a user repost interesting tweets without any communication with both his follower and followee. Therefore,

H2. Users' attachment motivation has a positive effect on their retweeting behavior intention.

Critical Mass

The term of Critical Mass indicates that a social movement explodes after some threshold of participants or actions have crossed (Oliver et al, 1985). Critical mass is the foundation for collective actions. As Rogers (1995) has shown, when a

certain number of users have adopted a new technology, the rate of adopting this technology will accelerate. The concept of Critical Mass has been applied in a variety of fields, such as economics, marketing, sociology, and communication (Li et al. 2005). For example, Markus (1987) have utilized this theory to explore the diffusion of the communication technologies. Also, Lou et al. (2000) have found that a subjective perception of the critical amount of current users may motivate an individual to adopt a communication technology. Thus, Critical Mass is found to be a basis for technology diffusion.

While previous studies focused on the role of critical mass in the adoption of the technology (e.g. adoption of micro-blog), in the present study, we intend to discuss its influence on the intention for the retweeting behavior. As discussed in section 2, observations show that retweeting behavior has a strong correlation with the contemporary social environment. The number of the retweets increases exponentially under mass emergency or social breaking news. Thus, critical mass is suggested to be a critical environmental factor that contributes to the retweeting behavior intention. While it is hard to measure the critical mass objectively, the individual perception of critical mass has been shown a good indicator, which is termed as perceived critical mass.

Perceived critical mass may affect the retweeting behavior intention from three aspects. First, it adds the visibility of certain tweets so that it increases their chance to be retweeted. As we know, there is a huge amount of information diffused across the micro-blogging platform every day. The tweets are displayed in temporal order with the older tweets listed at the bottom. Users may just browse them very quickly but could not catch them all. When a piece of social breaking news is diffused, it is possible that many users' followees have retweeted it. The frequency of the occurrence of a tweet may leverage the user's attention. Second, when there is a change of a collective behavior in the social environment, the individual may follow this trend. The individual's behavior intention is very possibly altered when a large number of followees are reposting a topic. In addition, the user could view the reposted times of a tweet. The tweet with a high number of times being reposted may be preferentially attached and inspires more reposting behavior (Barabasi and Alter 1999). For example, micro-blogging has been widely used for live news reports and retweets on the Mumbai terrorist attack in 2008 (Caulfield and Karmali 2008). But as the time goes by, the focus of the platform will change to the next topic and there are seldom retweets regarding this event. Third, once a number of users start to frequently repost a tweet, other tweets with a similar topic are inclined to be reposted. For instance, when a large traffic accident is reported and reposted frequently, the individual memory about driving safety will be activated. Thus, the user may not only repost the tweets about this traffic accident but also those from other location, especially the one near him/her. Thus, we hypothesize:

H3. Perceived critical mass has a positive effect on their retweeting behavior intention.

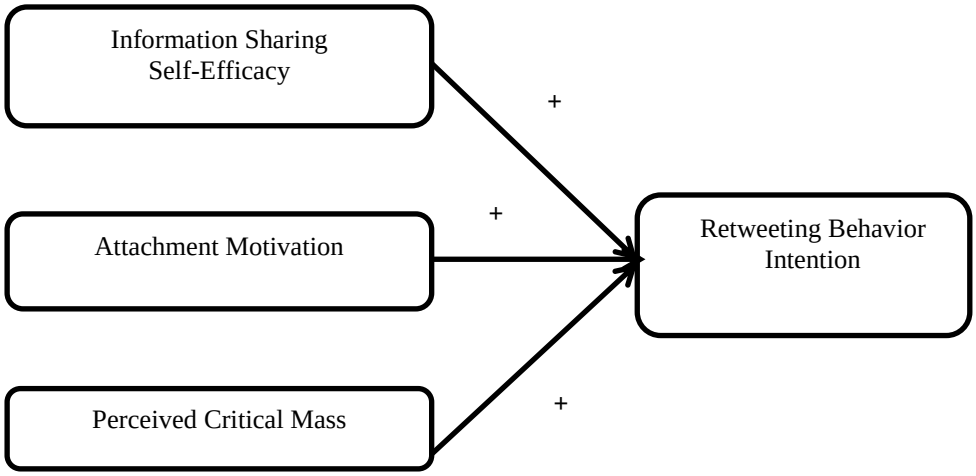

Figure 2. Research Model

CONCLUSTION AND DISCUSSION

Our model has four constructs and we intend to test it by collecting data from survey. We have finished the instrument development for the potential future study. All constructed are measured by multiple-item scales. For each construct, we develop the measurement items adapted from previous literature. Due to the space limitations, the detailed scales are not

listed in the text.

We are now conducting the pretest for the model and test the validity of the measurement. Despite that this framework is not tested empirically, the present study fills a significant theoretical research gap in the literature related to exploring retweeting behavior in the micro-blogging platform, thus making important theoretical and practical contributions.

Theoretically, while a large body of studies has noticed the existence and the feature of the retweeting behavior, it still lacks an understanding of the antecedents to it. The observed features of the retweets are not factors in determining the behavior. For example, author is one observed factor related to retweets. The tweets from the CEO of a well-known company may have a relatively higher reposting rate. However, it is not the CEO but the value included in his tweet inspiring other's recognition. And users with a high self-efficacy are likely to share the recognized value. Even the tweet from a common people could be reposted in large quantities, if it is cognitively accepted or timely in the mass emergency. But it is possible that the tweets from CEO are more referred by others due to his own knowledge and experience. Thus, this study help understand the antecedents to the retweeting behavior. Further, this study links theories about social cognitive and information sharing behavior, and proposes a conceptual model. In the future study, we intend to empirically test the proposed model by collecting data from micro-blogging users.

From a practical perspective, this study provides insights for the marketers who want to unitize micro-blogging platform to improve their company presence. The influence of perceived critical mass could be utilized by the organization. Finding a proper time to post the tweet may help increase the probability of being reposted. In addition, mostly micro-blogging platforms provide their current trend to the public. Users could know what the top ten most popular topics are. Based on the current model, users' attention could be altered by the changes of published trend, which could be utilized by the marketer. Further, companies should use their micro-blog accounts to communicate with their customers, instead of only posting the advertisement. The conversational tweets with customers would be a good way to increase the possibility of their information being shared.

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